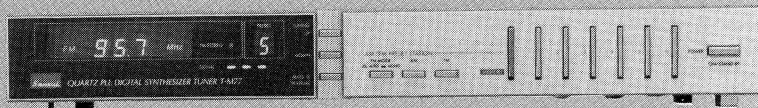


SERVICE MANUAL

QUARTZ PLL DIGITAL SYNTHESIZER TUNER

SANSUI T-M77/M77L



CAUTION

1. Use only replacement parts recommended by the manufacturer.
2. Measure insulation resistance before returning the appliance to the customer to prevent electrical shock.

Sansui

SANSUI ELECTRIC CO., LTD.

•SPECIFICATIONS

•T-M77

FM Section

Tuning range 88 to 108 MHz

Usable sensitivity

Mono IHF 10.5 dBf (1.8 μ V : T100)
DIN 0.9 μ V

50 dB quieting sensitivity

Mono 17.0 dBf
Stereo 37.0 dBf

Signal to noise ratio at 65 dBf

Mono 75 dB
Stereo 70 dB

Distortion at 65 dBf

Mono less than 0.1% at 1,000 Hz
Stereo less than 0.15% at 1,000 Hz

Alternate channel selectivity (at 400 kHz)

..... 55 dB

Stereo separation 40 dB at 1,000 Hz

Frequency response 30 to 15,000 Hz

+1.0 dB, -1.5 dB

Antenna input impedance 300 ohms balanced 75 ohms unbalanced

AM Section

Tuning range 530 to 1,600 kHz

Usable sensitivity 50 dB/m (316 μ V/m)

Signal to noise ratio 45 dB

Image response ratio 42 dB at 1,000 kHz

Others

Output voltage and Impedance

..... 600 mV/2.2 kilohms

Power requirements 120/220/240V

50/60 Hz

For U.S.A. and Canada 120V (60 Hz)

Power consumption 9W

Dimensions 345 mm (13-5/8")W

46 mm (1-13/16")H

225 mm (8-7/8")D

Weight 2.0 kg (4.4 lbs) net 2.6 kg (5.7 lbs) packed

•T-M77L

FM Section

Tuning range 88 to 108 MHz

Usable sensitivity

Mono IHF 10.5 dBf (1.8 μ V : T100)
DIN 0.9 μ V

50 dB quieting sensitivity

Mono 17.0 dBf
Stereo 37.0 dBf

Signal to noise ratio at 65 dBf

Mono 75 dB
Stereo 70 dB

Distortion at 65 dBf

Mono less than 0.1% at 1,000 Hz
Stereo less than 0.15% at 1,000 Hz

Alternate channel selectivity (at 400 kHz)

..... 55 dB

Stereo separation 40 dB at 1,000 Hz

Frequency response 30 to 15,000 Hz

+1.0 dB, -1.5 dB

Antenna input impedance 300 ohms balanced 75 ohms unbalanced

AM Section

Tuning range

MW 530 to 1,600 kHz
LW 153 to 360 kHz

Usable sensitivity

MW 50 dB/m (316 μ V/m)
LW 62 dB/m

Signal to noise ratio 45 dB

Image response ratio

MW 42 dB at 1,000 kHz
LW 35 dB at 250 kHz

Others

Output voltage and Impedance

..... 600 mV/2.2 kilohms

Power requirements 120/240V

50/60 Hz

Power consumption 9W

Dimensions 345 mm (13-5/8")W

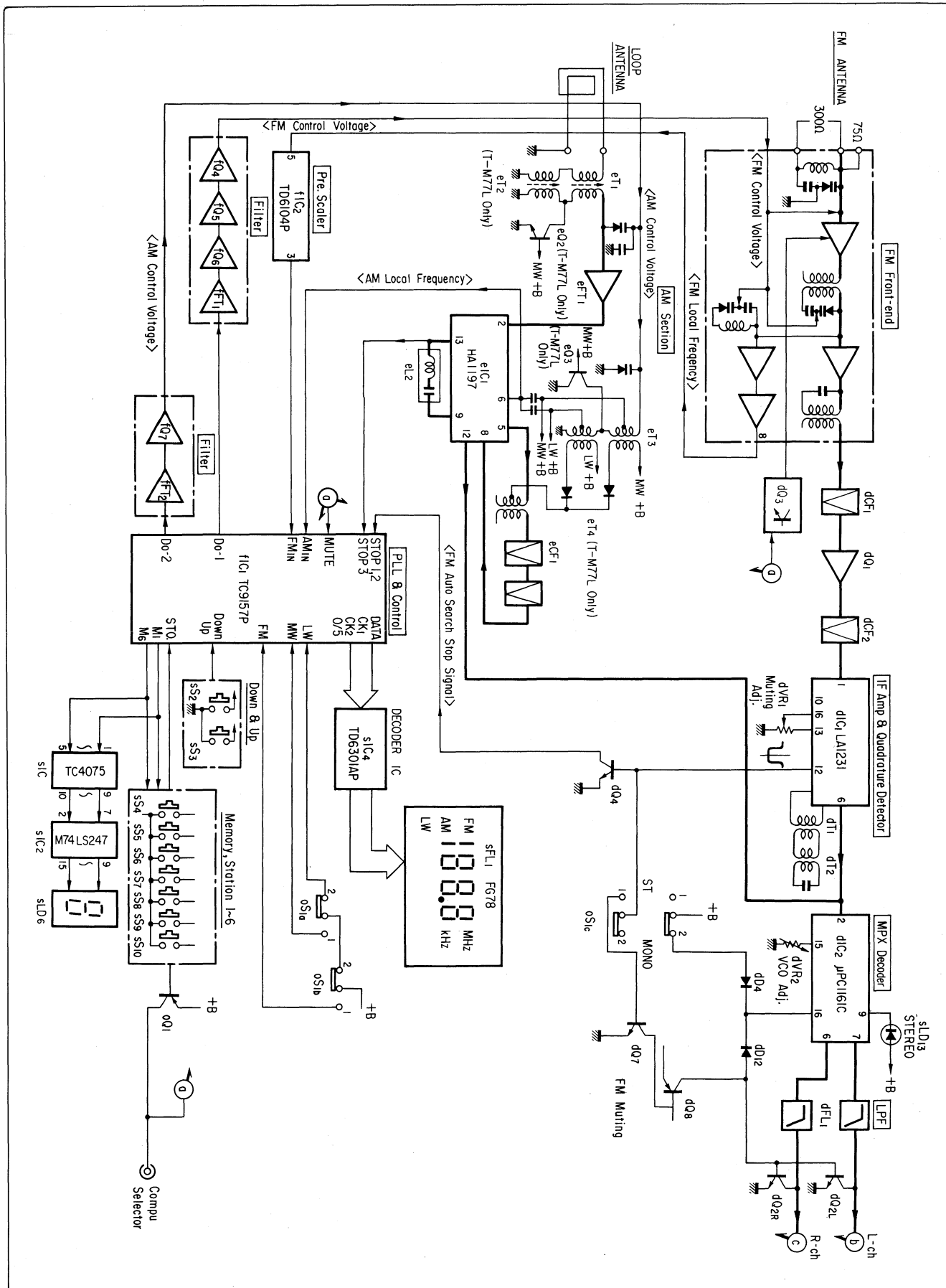
46 mm (1-13/16")H

225 mm (8-7/8")D

Weight 2.0 kg (4.4 lbs) net 2.6 kg (5.7 lbs) packed

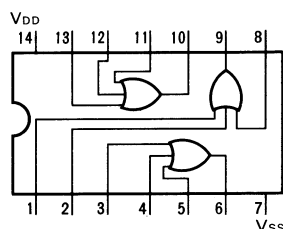
* Design and specifications subject to change without notice for improvements.

1. BLOCK DIAGRAM

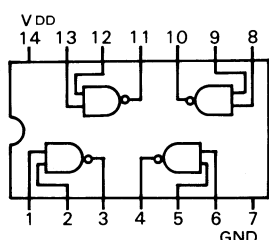


2. INTERIOR BLOCK DIAGRAM OF IC & TERMINAL FUNCTION OF TC9157P

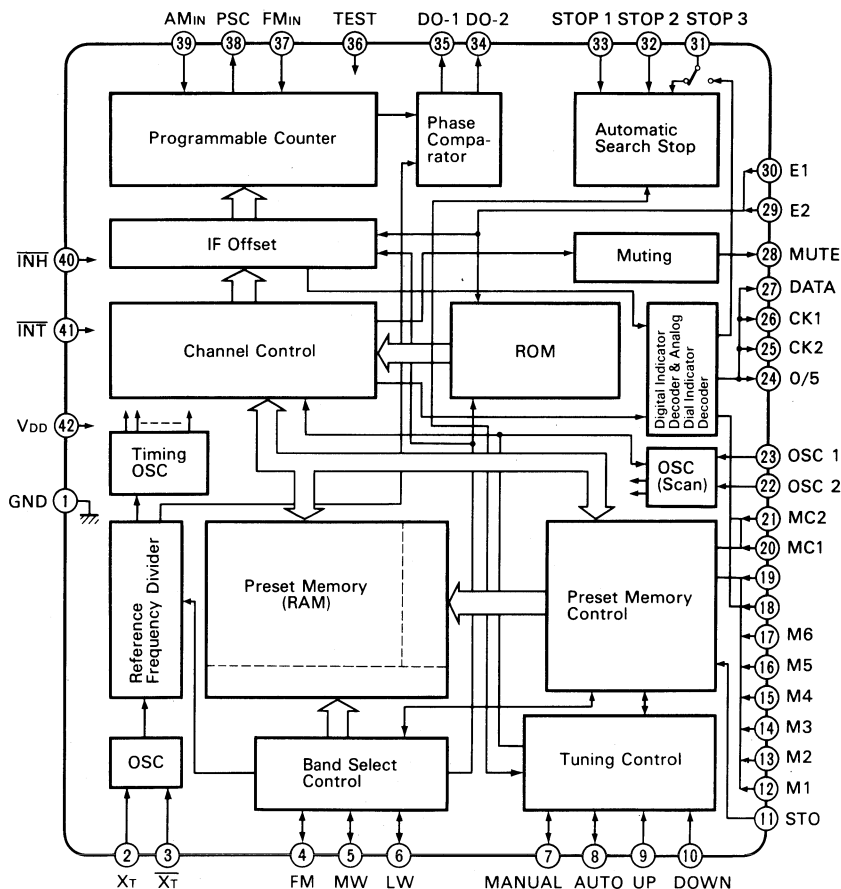
•TC4075BP (OR IC)



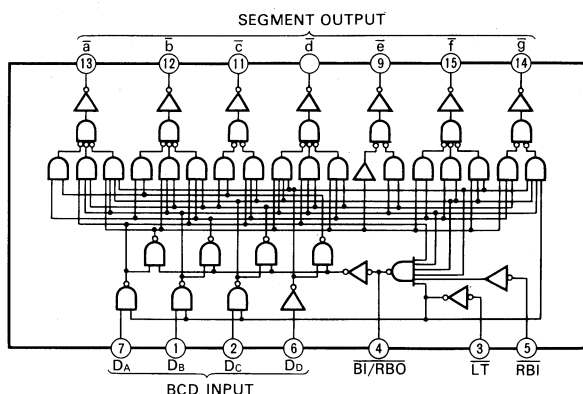
•TC4011P (Quad NAND IC)



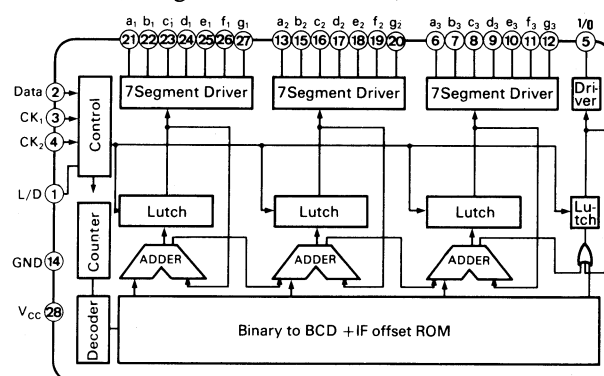
•TC9157P (PLL & Control IC)



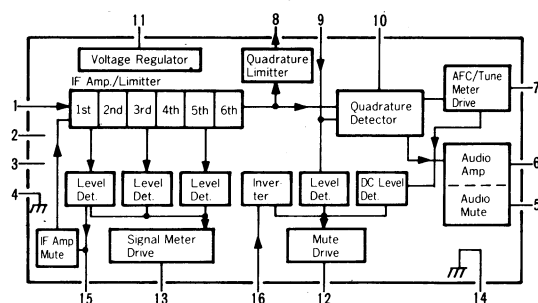
•M74LS247/MB74LS247 (BCD-TO-SEVEN-SEGMENT DECODER DRIVE IC)



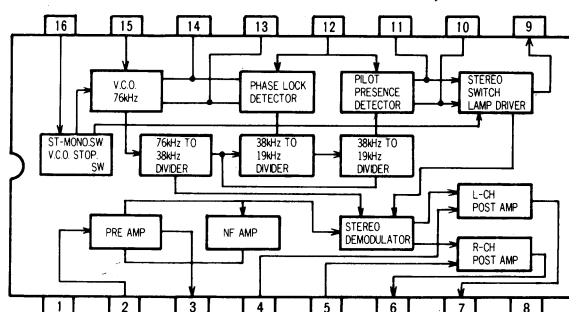
•TD6301P (7 Segment Decoder IC)



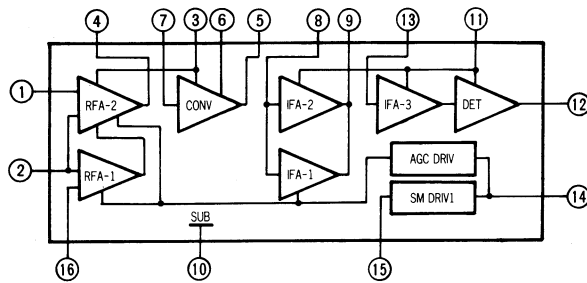
•LA1231N (FM IF AMP & Quadrature Detector IC)



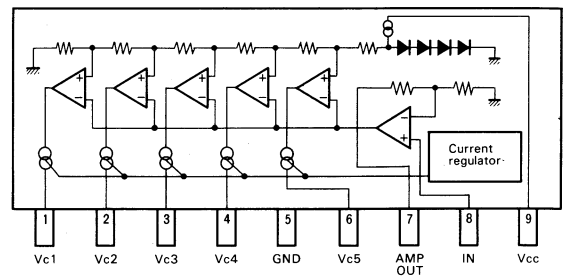
•μPC1161C (FM Stereo Demodulator IC)



• HA1197 (AM Tuner IC)



• BA6137 (L.E.D. Drive IC)



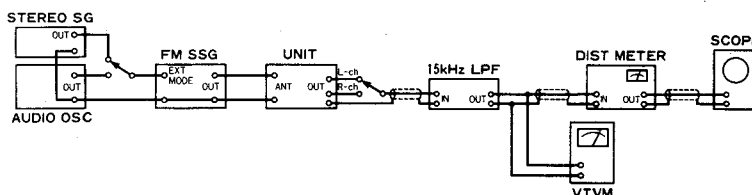
• Terminal Function of LSI-TC9157P

Pin No.	Pin Name	Functions
2,3	X _T X _T	Terminals to connect a quartz oscillator for generating a reference frequency.
4 5 6	FM MW LW	Terminals to input a signal for switching FM/MW/LW band.
7 8	MANUAL AUTO	Terminal to input a signal for switching the manual operation to automatic search operation or vice versa in the UP/DOWN tuning mode. "H": Automatic, "L": Manual
9 10	UP DOWN	Terminals to input a signal from the tuning key. * In manual operation: When the key is kept depressed for 0.3 sec or more in one-step/one-push step feeding, the operation changes to fast forwarding; when the key is released, the operation stops at the next stop. In this case, even if there is a station on the way, the station is neglected. * In automatic search operation: When the key is depressed once, the automatic search operation starts and stops automatically after having selected the desired station.
11	STO	Terminal to input a signal for storing data in the preset memory unit. Input/output terminal in which a LED driver is provided. * When depressing the STO key, the STO lamp comes on. Next, when any desired memory No. key is depressed, the data on receiving frequency is written into the memory unit and the STO lamp goes off. * When the STO key is depressed and the memory No. key is not depressed, the frequency data is released automatically.
12 17	M1 M6	Terminals to input a signal for designating memory address. Input/output terminals in which a LED driver is provided * Terminals M ₁ to M ₆ designate the addresses of FM memory unit in FM receiving and the addresses of AM memory unit in AM receiving. * When depressing the STO key and any desired station key of M ₁ to M ₆ , the data is written into the memory unit. * When depressing any desired station key of M ₁ to M ₆ , the data is read out.
22	OSC 2	Terminal to connect a condenser and resistor for the oscillator for determining the speed of AM automatic search operation.
23	OSC 1	Terminal to connect a condenser and resistor for the oscillator for determining the speed of FM automatic search operation.
24 25 26 27	O/5 CK2 CK1 DATA	Terminals to output the data for displaying the received frequency digitally and a timing signal. The data fed to the driver TD6301P for displaying a static frequency and the timing signal are outputted once only when the frequency is updated in such case as when the power supply is tuned on, the UP/DOWN key is depressed, the automatic scanning operation is made, the data are read out of the memory unit, or FM/AM is switched. In the ordinary receiving state, this terminal is fixed to a "L" level. * O/5: For displaying 50 kHz during FM receiving in Europe. * Data: Binary coded frequency data and receiving band. * CK-1, CK-2: Initialize and transfer clock signals.

Pin No.	Pin Name	Functions															
28	MUTE	Terminal to output the muting signal. The terminal is kept in "L" level in ordinary state, and in "H" level in muting.															
29 30	E2 E1	Terminals to input a signal for selecting destinations of Japan, USA, and Europe. <table border="1"> <thead> <tr> <th>E₁</th><th>E₂</th><th>Mode</th></tr> </thead> <tbody> <tr> <td>0</td><td>0</td><td>Japan</td></tr> <tr> <td>1</td><td>0</td><td>Europe</td></tr> <tr> <td>0</td><td>1</td><td>USA (MW 9kHz)</td></tr> <tr> <td>1</td><td>1</td><td>USA (MW 10kHz)</td></tr> </tbody> </table> * Inputs of terminals E ₁ and E ₂ are read and latched in INH = L state and in FM/AM switching.	E ₁	E ₂	Mode	0	0	Japan	1	0	Europe	0	1	USA (MW 9kHz)	1	1	USA (MW 10kHz)
E ₁	E ₂	Mode															
0	0	Japan															
1	0	Europe															
0	1	USA (MW 9kHz)															
1	1	USA (MW 10kHz)															
31	STOP 3	When a IF450 kHz signal is applied to this terminal during automatic search operation, the scanning operation stops.															
32	STOP 2	Terminal to input a signal for performing the automatic search stop. When a "H" level signal is applied to STOP 1 and this terminal during automatic search operation, the scanning operation stops.															
33	STOP 1	Terminal to input a signal for slowing the speed of scanning operation. When a "H" level signal is applied to this terminal during automatic search operation, the speed of scanning operation halves.															
34 35	DO-2 DO-1	Terminals to output a signal from a phase comparator. These terminals can be used for FM and AM, separately, since the same signal is outputted from the terminals D ₀ -1 and D ₀ -2 at the same time.															
36	TEST	Terminal to input a signal of test mode. Test mode in "H" level.															
37	FM _{IN}	Terminal to input a signal from the FM programmable counter. An amplifier is provided in the input.															
38	PSC	Terminal to output a signal for controlling the Prescaler IC of TD6104P.															
39	AM _{IN}	Terminal to input a signal from the AM programmable counter. An amplifier is provided in the input.															
40	INH	Terminal to input a signal of inhibit. Ordinary operation in "H" level; inhibit operation in "L" level.															
41	INT	Terminal to input an initialize signal. This terminal changes to H level in the ordinary operation and to L level in the initialize operation.															
42 1	V _{DD} GND	Power supply terminals. 5V ± 0.5V.															

3. ADJUSTMENTS

3-1. FM Adjustment (See Top View on Page 6)



1) FM IF & Reference Frequency Adjustment

- Note: 1. SELECTOR FM
2. FM MUTING/MODE OFF/MONO

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	Reference Frequency Adj.	No Input	—	Between Point (A) (Pin 24 of f1C1) & Earth Freq. counter	f1C1 (F-3955)	25 kHz	• Short between Point B & Point C (Pin 36 & 42 of f1C1)
2.	IF Coil Adj.	98MHz ANT Input 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	Between Point (D) (dVR1, F-3955) & Earth DC Volt Meter	IFT Coil (Front-end)	Max. DC Volt	
3.	Discriminator Coil Adj. In case of using Genescope	1 No Input	—	Between Point (E) & Point (F) (Across dR14, F-3955) DC Volt Meter	dT1 (F-3955)	DC 0V ± 30mV	• Repeat procedures as stated in subject 1 & 2.
		2 Output 60dB, Genescope	Point (G) (dR2)	Between Point (H) (dC7 & Earth)	dT2 (F-3955)	Steep linearity of S curve. Make symmetrical S curve.	
	Discriminator Coil Adj. In case of using Dist meter	1 No Input	—	Between Point (E) & Point (F) (Across dR14, F-3955) DC Volt Meter	dT1 (F-3955)	DC 0V ± 30mV	• Repeat procedures as stated in subject 1 & 2.
		2 98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	• Output Terminal VTVM/SCOPE & Dist Meter	dT2, (F-3955)	Min. THD	

• ADJUSTMENT FOR FM

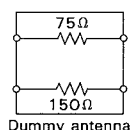
There are two kind in indication of FM SSG output attenuator

1. Attenuator with marking of 75Ω open open indication type.
2. Attenuator with marking of 75Ω load or close load or close indication type.

FM SG output level in this FM adjustment are described as open indication type.

To feed FM signal, a dummy antenna circuit as Fig. 3-1 must be connected between FM SG output and ANT terminal (300Ω) of the unit.

Fig. 3-1



- The following table shows relations among FM SG attenuator indication (dB), available power ratio (dBf) and antenna terminal voltage (dB/μV) in each indication type.

	FM SG Attenuator Indication	Available Power Ratio	Antenna Terminal Voltage
Open indication type	0 dB 66 dB	−0.8 dBf 65.2 dBf	−6 dB/μV 60 dB/μV
Load or close indication type	0 dB 60 dB	5.2 dBf 65.2 dBf	0 dB/μV 60 dB/μV

2) FM STEREO Adjustment

1. SELECTOR FM

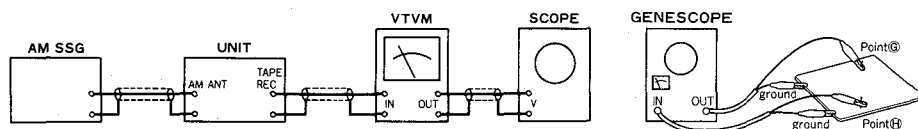
2. FM MUTING/MODE AUTO

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	PLL VCO Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), R or L MODE 1kHz+Pilot (100% MOD.), STEREO SG	ANT terminal 300Ω	Stereo Indicator	dVR2 (F-3955)	Light indicator	Adjust the dVR2 within center of light level
	PLL VCO Adj. In case of using Freq.	98MHz ANT Input 65dBf (59.8dB), FM SSG, No MOD.	Same as above	Between Point ① (Pin 9 of dIC2) & Earth Freq. Counter	dVR2 (F-3955)	19kHz ± 50Hz	
2.	Muting level Adj.	98MHz ANT Input 22dBf (16.8dB), FM SSG, Pilot 19kHz (9% MOD.), L or R MODE 1kHz+Pilot (100% MOD.), STEREO SG.	Same as above	Stereo indicator OUTPUT L-CH or R-CH, VTVM & SCOPE	dVR1 (F-3955)	Stereo indicator turns ON or Output Signal comes out	

3-2. AM Adjustment (See Top View on Page 6)**1) AM IF Adjustment & MW (AM) Tuning Adjustment**

Note: 1) SELECTOR AM (T-M77)/MW (T-M77L)

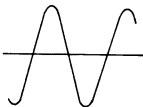
2) Connect AM loop antenna to AM antenna terminal.



STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	Genescope Output 0dB	Point ① (eR5) (F-3955)	Between Point ② (eR27, F-3955) & Earth	eCF1, eL2 (F-3955)	Max, Waveform	
2.	522kHz (9kHz step) or 520kHz (10kHz step) Tuning Adj.	No Input	—	Between Point ③ (eR1, F-3862) & Earth DC Volt Meter	eT3 (F-3955)	1V	• Repeat procedures as stated in subject 2 & 3.
3.	1610kHz (10kHz step) or 1611kHz (9kHz step) Tuning Adj.	No Input	—	Same as above	eTC2 (F-3955)	8V	
4.	603kHz (9kHz step) or 600kHz (10kHz step) RF Adj.	603kHz (or 600kHz) ANT Input 0dB 400Hz (30% MOD.), AM SSG	ANT terminal	Output Terminal L-CH or R-CH VTVM & Scope	eT1 (F-3955)	Max. Output	
5.	1404kHz (9kHz step) or 1400kHz (10kHz step) RF Adj.	1400kHz (or 1400kHz) ANT Input 30dB 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC1 (F-3955)	Max. Output	

2) LW Tuning Adjustment (T-M77L only)

Note: SELECTOR..... LW

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	153kHz Tuning Adj.	No Input	—	Between Point ① (eR1, F-3862) & Earth DC Volt Meter	eT4 (F-4204)	1V	• Repeat procedures as stated in subject 1 & 2.
2.	360kHz Tuning Adj.	No Input	—	Same as above	eTC4 (F-4204)	8V	
3.	170kHz RF Adj.	170kHz ANT Input 30dB 400Hz (30% MOD.), AM SSG	ANT terminal	Output Terminal L-CH or R-CH VTVM & Scope	eT2 (F-4204)	Max. Output	
4.	300kHz RF Adj.	300kHz ANT Input 30dB 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC3 (F-4204)	Max. Output	

•Abbreviations

Equipment		Others
AM FM Generator Oscilloscope	Genescope	Antenna
AM Standard Signal Generator	AM SSG	Modulation
FM Standard Signal Generator	FM SSG	Total Harmonic Distortion
FM Stereo Generator	Stereo SG	
Oscilloscope	Scope	
Audio Oscillator	Audio Osc.	
Distortion Meter	Dist. Meter	

<NOTES>

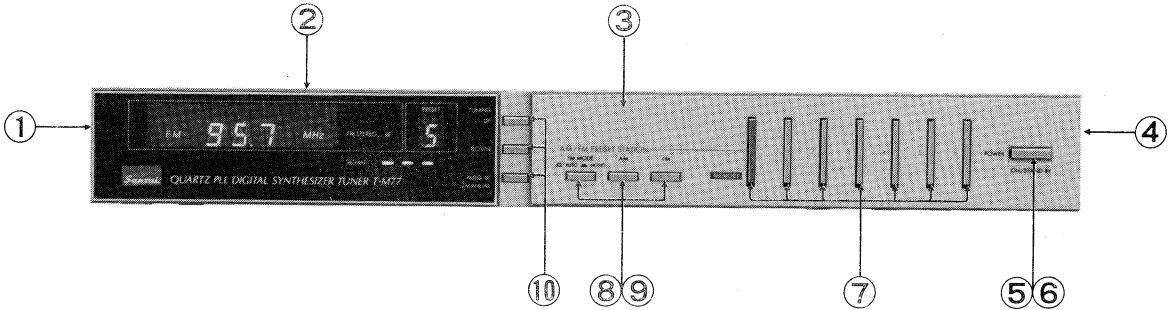
When the user moves to different channel step area on FM or AM, the following arrangements must be performed.

Sets Applicable to		Channel Step Frequency		fIC2 Input Port Level		Jumper Wire (F-3955)				9k/10k Switch fS12
		AM kHz	FM kHz	E ₁	E ₂	4	5	6	7	
I	South Africa	9k	50k	L	L	○	—	—	○	None
	Europe	9k	50k	H	L	○	—	○	—	None
	America	9k	100k	L	H	—	○	—	○	None
	America	10k	100k	H	H	—	○	○	—	None
II	Sets which 9k/10k Switch is installed	9k	100k	L	H	—	○	—	—	9 kHz
		10k	100k	H	H					10 kHz

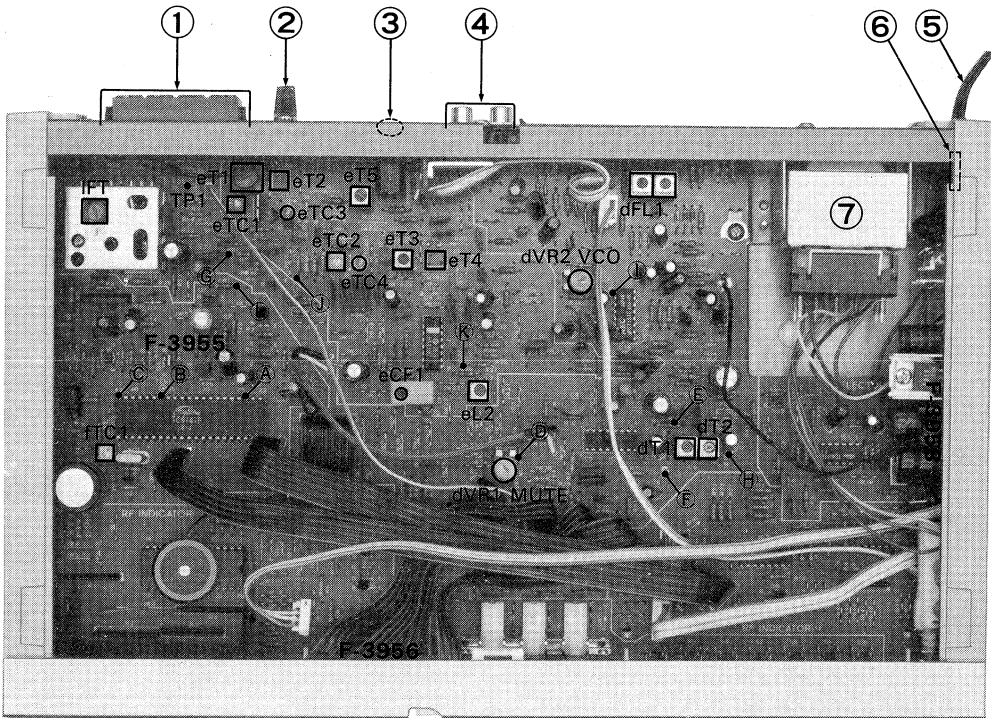
•Note: 1) L=Low Level, H=High Level, ○=Connect, —=Remove
2) fS12=AM 9k/s10k Switch on F-3955
3) Remove the 9k/10 kHz switch only when a user operates the set (II) in 50 kHz channel step (I)

4. OTHER PARTS

4-1. Front View



4-2. Top View



Parts List <Front View>

Parts No.	Stock No.	Description
1	47228100	Side Panel (Left)
2	47178400	Bonnet
3	47178000	Front Panel Ass'y (T-M77)
	47178100	Front Panel Ass'y (T-M77L)
4	47228200	Side Panel (Right)
5	46412500	Push SW., POWER (T-M77)
	46412400	Push SW., POWER (T-M77L)
6	47168800	Knob, POWER SW.
7	46547000	Push SW., PRESET STATION
8	46547800	Selector SW., (T-M77)
	46547900	Selector SW., (T-M77L)
9	47168700	Knob, Selector SW.
10	46133300	Push SW., UP, DOWN MANUAL/AUTO

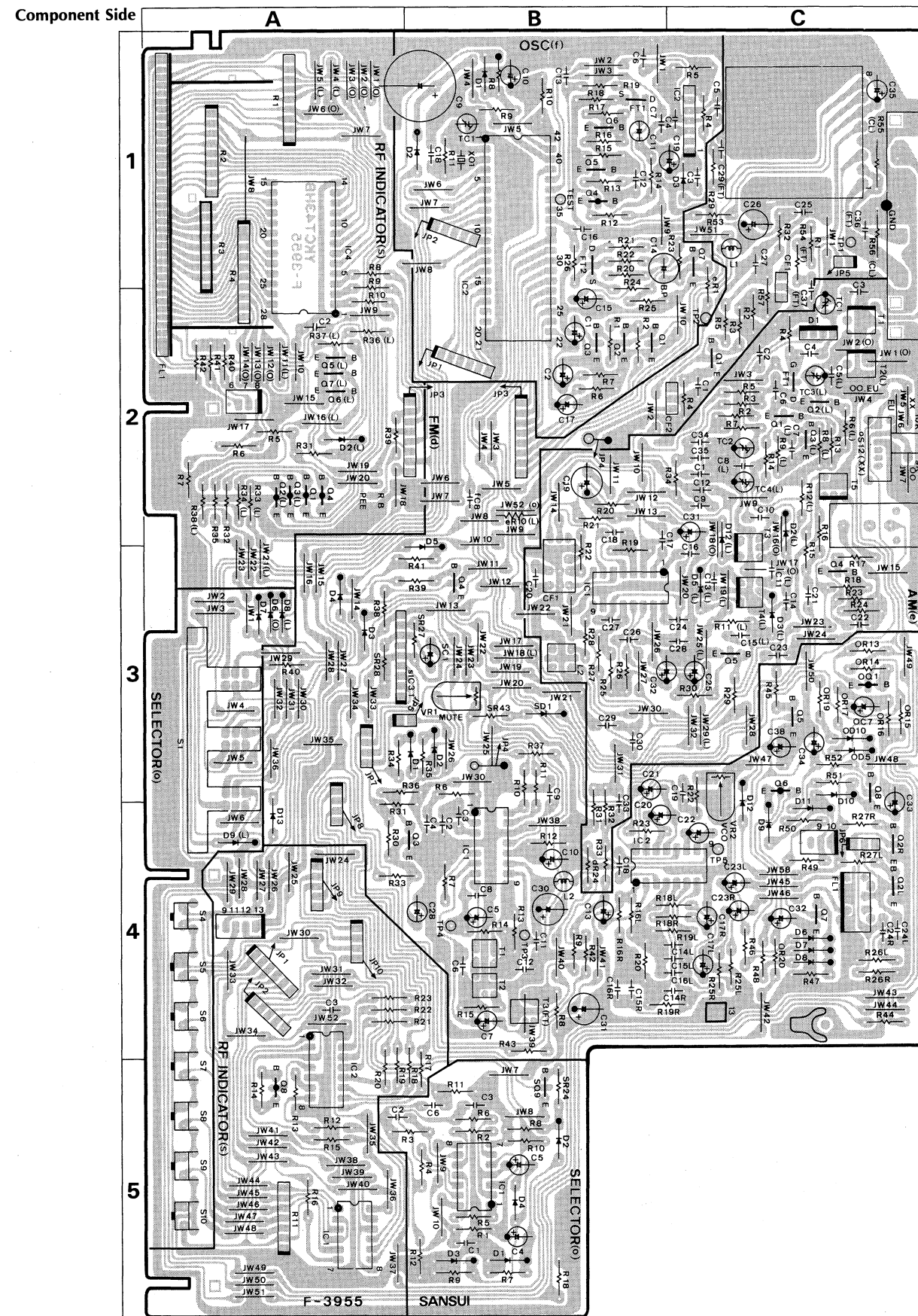
Parts List <Top View>

Parts No.	Stock No.	Description
1	46547300	4P Antenna Terminal
2	22301510	Ground Terminal
3	46547200	Mini Jack, COMPU SELEKTOR
4	46438100	2P Output Terminal
5	38005400	Power Supply Cord (T-M77)
	38004500	Power Supply Cord (T-M77L)
6	47168600	AC Cord Cover
7	15010901	Power Transformer (T-M77)
	15010905	Power Transformer (T-M77L)

5. PARTS LOCATION & PARTS LIST

5-1. F-3955 Tuner Circuit Board (Stock No. 00734501 = T-M77/00734505 = T-M77L)

•Since some of capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors & resistors, which was issued on February 1983.



Parts List < F-3955 >

Parts No.	Stock No.	Description
	46170000 or 46562600	FM Frontend Pack FSA-060 FM Frontend Pack ETA-010
•Transistor		
dQ1	46393101 or 46393201	2SC2839SPA 2SC2786
dQ2	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785
dQ3	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785
dQ4	46367301 or 46367101 or 46391901	2SC2458 2SC2603 2SC2785
dQ5	46367101 or 46391901 or 46367301	2SC2603 2SC2785 2SC2458
dQ6	46367001 or 46367201 or 46392001	2SC1115 2SC1048 2SA1175
dQ7	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785
dQ8	46367001 or 46367201 or 46392001	2SA1115 2SA1048 2SA1175
•IC		
dIC1	07191200	LA1231N-SANSUI
dIC2	03609900	μPC1161C3
•Diode		
dD1	03117600 or 46086000	1S2473T77 1S1588TP-3
dD2	03117600 or 46086000	1S2473T77 1S1588TP-3
dD3	03117600 or 46086000	1S2473T77 1S1588TP-3
dD4	03117600 or 46086000	1S2473T77 1S1588TP-3
dD5	03117600 or 46086000	1S2473T77 1S1588TP-3
dD6	03117600 or 46086000	1S2473T77 1S1588TP-3
dD7	03117600 or 46086000	1S2473T77 1S1588TP-3
dD8	03117600 or 46086000	1S2473T77 1S1588TP-3
dD9	03117600 or 46086000	1S2473T77 1S1588TP-3
dD10	03117600 or 46086000	1S2473T77 1S1588TP-3
dD11	03117600 or 46086000	1S2473T77 1S1588TP-3
dD12	03117600 or 46086000	1S2473T77 1S1588TP-3
dD13	03117600 or 46086000	1S2473T77 1S1588TP-3
dCF1	46202500	Ceramic Filter 10.7MHz
dCF2	46202500	Ceramic Filter 10.7MHz
dFL1	46151300	Low Pass Filter, 38kHz
dL1	46204200	Inductor 3.3μH
dL2	46204200	Inductor 3.3μH
dT1	46369100	FM IF Coil
dT2	46369200	FM IF Coil
dVR1	10370700	10kΩ(B) S.V.R., Muting
dVR2	07218000	6.8kΩ(B) S.V.R., PLL VCO

Parts No.	Stock No.	Description
•Transistor		
eQ2	46540801	2SC2878 (T-M77L Only)
eQ3	46540801	2SC2878 (T-M77L Only)
eQ5	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785
eQ6	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785
•FET		
eFT1	46393001 or 46393001	2SK192A-Y 2SK192A-GR
•IC		
eIC1	03603900	HA1197
eD1	46146300	Varactor Diode KV1362
•Diode		
eD2	03117600 or 46086000	1S2473T77 (T-M77L Only) 1S1588TP-3 (T-M77L Only)
eD3	03117600 or 46086000	1S2473T77 (T-M77L Only) 1S1588TP-3 (T-M77L Only)
eD4	03117600 or 46086000	1S2473T77 (T-M77L Only) 1S1588TP-3 (T-M77L Only)
eD5	03117600 or 46086000	1S2473T77 (T-M77L Only) 1S1588TP-3 (T-M77L Only)
eD6	03117600 or 46086000	1S2473T77 1S1588TP-3
eTC1	46162800 or 46437400	Trimmer 20pF Trimmer 20pF
eTC2	46162900 or 46437500	Trimmer 30pF Trimmer 30pF
eTC3	46162800 or 46437400	Trimmer 20pF (T-M77L Only) Trimmer 20pF (T-M77L Only)
eTC4	46162800 or 46437400	Trimmer 20pF (T-M77L Only) Trimmer 20pF (T-M77L Only)
eCF1	07254000	Ceramic Filter SFL450G3
eT1	46394600	AM ANT Coil
eT2	46397900	AM RF Coil (T-M77L Only)
eT3	46398200	AM RF Coil
eT4	46398000	AM RF Coil (T-M77L Only)
eL2	46369600	AM IF Coil
•Transistor		
fQ1	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785
fQ2	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785
fQ3	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785
fQ4	46367001 or 46367201 or 46392001	2SA1115 2SA1048 2SA1175
fQ5	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785
fQ6	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785
fQ7	46367101 or 46367301 or 46391901	2SC2603 2SC2458 2SC2785

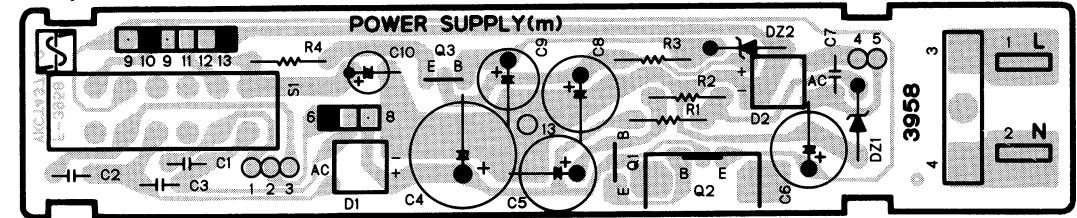
Parts List <F-3955>

Parts No.	Stock No.	Description
•FET		
fFT1	03703001	2SK117-Y
	or 03703002	2SK117-GR
	or 03703401	2SK163-K2
	or 03703402	2SK163-L1
fFT2	03703001	2SK117-Y
	or 03703002	2SK117-GR
	or 03703401	2SK163-K2
	or 03703402	2SK163-L1
•IC		
fIC1	46397400	TC9157P
fIC2	07225000	TD6104P
fXO1	07237700	Quartz Element NC-18C
•Diode		
fD1	03117600	1S2473T77
	or 46086000	1S1588TP-3
fD2	03117600	1S2473T77
	or 46086000	1S1588TP-3
fD3	03117600	1S2473T77
	or 46086000	1S1588TP-3
fC9	46579700	4700 μ F 6.3V E.C.
fC11	08451700	1 μ F 50V E.B.
fC14	08451900	3.3 μ F 50V E.B.
fTC1	46437600	Trimmer 40pF
•Transistor		
oQ1	46367001	2SA1115
	or 46367201	2SA1048
	or 46392001	2SA1175
•IC		
oIC1	03604000	MSM4011RS
	or 03604100	TC4011P
•Diode		
oD1	03117600	1S2473T77
	or 46086000	1S1588TP-3
oD2	03117600	1S2473T77
	or 46086000	1S1588TP-3
oD3	03117600	1S2473T77
	or 46086000	1S1588TP-3
oD4	03117600	1S2473T77
	or 46086000	1S1588TP-3
oD5	03117600	1S2473T77
	or 46086000	1S1588TP-3
oD6	46086000	1S1588TP-3 (T-M77L Only)
oD7	03117600	1S2473T77
	or 46086000	1S1588TP-3
oD8	03117600	1S2473T77
	or 46086000	1S1588TP-3
oD9	03117600	1S2473T77 (T-M77L Only)
	or 46086000	1S1588TP-3 (T-M77L Only)
oD10	03117600	1S2473T77
	or 46086000	1S1588TP-3
oS1	46547800	Push SW., SELECTOR (T-M77)
	or 46547900	Push SW., SELECTOR (T-M77L)
oS4	46547000	Push SW., MEMORY
oS5	46547000	Push SW., PRESET 1
oS6	46547000	Push SW., PRESET 2
oS7	46547000	Push SW., PRESET 3
oS8	46547000	Push SW., PRESET 4
oS9	46547000	Push SW., PRESET 5
oS10	46547000	Push SW., PRESET 6
oS12	46177200	Push SW., AM STEP (9k/10k)

Parts No.	Stock No.	Description
•Transistor		
sQ1	46367001	2SA1115
	or 46367201	2SA1048
	or 46392001	2SA1175
sQ2	46367001	2SA1115 (T-M77L Only)
	or 46367201	2SA1048 (T-M77L Only)
	or 46392001	2SA1175 (T-M77L Only)
sQ3	46367001	2SA1115 (T-M77L Only)
	or 46367201	2SA1048 (T-M77L Only)
	or 46392001	2SA1175 (T-M77L Only)
sQ4	46367001	2SA1115
	or 46367201	2SA1048
	or 46392001	2SA1175
sQ5	46367101	2SC2603 (T-M77L Only)
	or 46367301	2SC2458 (T-M77L Only)
	or 46391901	2SC2785 (T-M77L Only)
sQ6	46367101	2SC2603 (T-M77L Only)
	or 46367301	2SC2458 (T-M77L Only)
	or 46391901	2SC2785 (T-M77L Only)
sQ7	46367101	2SC2603 (T-M77L Only)
	or 46367301	2SC2458 (T-M77L Only)
	or 46391901	2SC2785 (T-M77L Only)
sQ8	46367001	2SA1115
	or 46367201	2SA1048
	or 46392001	2SA1175
sQ9	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
•IC		
sIC1	46563200	TC4075BP
	or 46579300	μ PD4075BC
sIC2	46257100	M74LS247
	or 46257200	MB74LS247
sIC3	46197200	BA6137
sIC4	46410100	TD6301AP
•Diode		
sD1	03117600	1S2473T77
	or 46086000	1S1588TP-3
sD2	03117600	1S2473T77 (T-M77L Only)
	or 46086000	1S1588TP-3 (T-M77L Only)
sD3	03117600	1S2473T77 (T-M77L Only)
	or 46086000	1S1588TP-3 (T-M77L Only)
sFL1	46526400	Display Tube FG78H8GR
sR1	46045900	10k Ω \times 8 1/8W A.R.
sR2	46045900	10k Ω \times 8 1/8W A.R.
sR3	46045900	10k Ω \times 8 1/8W A.R.
sR4	46045900	10k Ω \times 8 1/8W A.R.
sR11	46042200	10k Ω \times 6 1/8W A.R.
sZ1	07244900	Buzzer PKM12-4A2

5-2. F-3958 Power Supply Circuit Board (Stock No. 00734901 = T-M77/00734905 = T-M77L)

Component Side



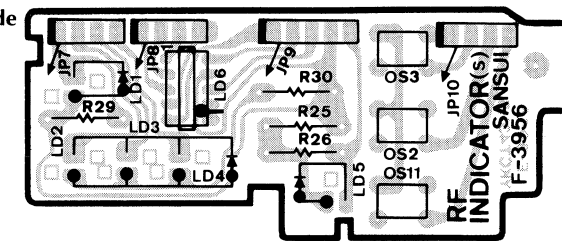
Parts List

Parts No.	Stock No.	Description	Parts No.	Stock No.	Description
•Transistor			•Zener Diode		
mQ1	03059501	2SC945	mDZ1	46104300	O5Z15-Y
	or 03068301	2SC2320	mDZ2	07178900	RD 6.2E-B
	or 07194801	2SC1815			
mQ2	03083901	2SD313AL	mR4	46227400	4.7 Ω 1/2W N.I.R.
mQ3	03083901	2SD313AL			
•Diode			mS1	46412500	Push SW., POWER (T-M77)
mD1	46273600	DBB10-B		46412400	Push SW., POWER (T-M77L)
mD2	46273600	DBB10-B		38005300	Power Supply Cord

•Note: The circuit board, F-3956 is not supplied as the assembled.
However, the individual parts on the circuit board is provided by orders.

5-3. F-3956 Preset Scan Display Circuit Board

Component Side



Parts List

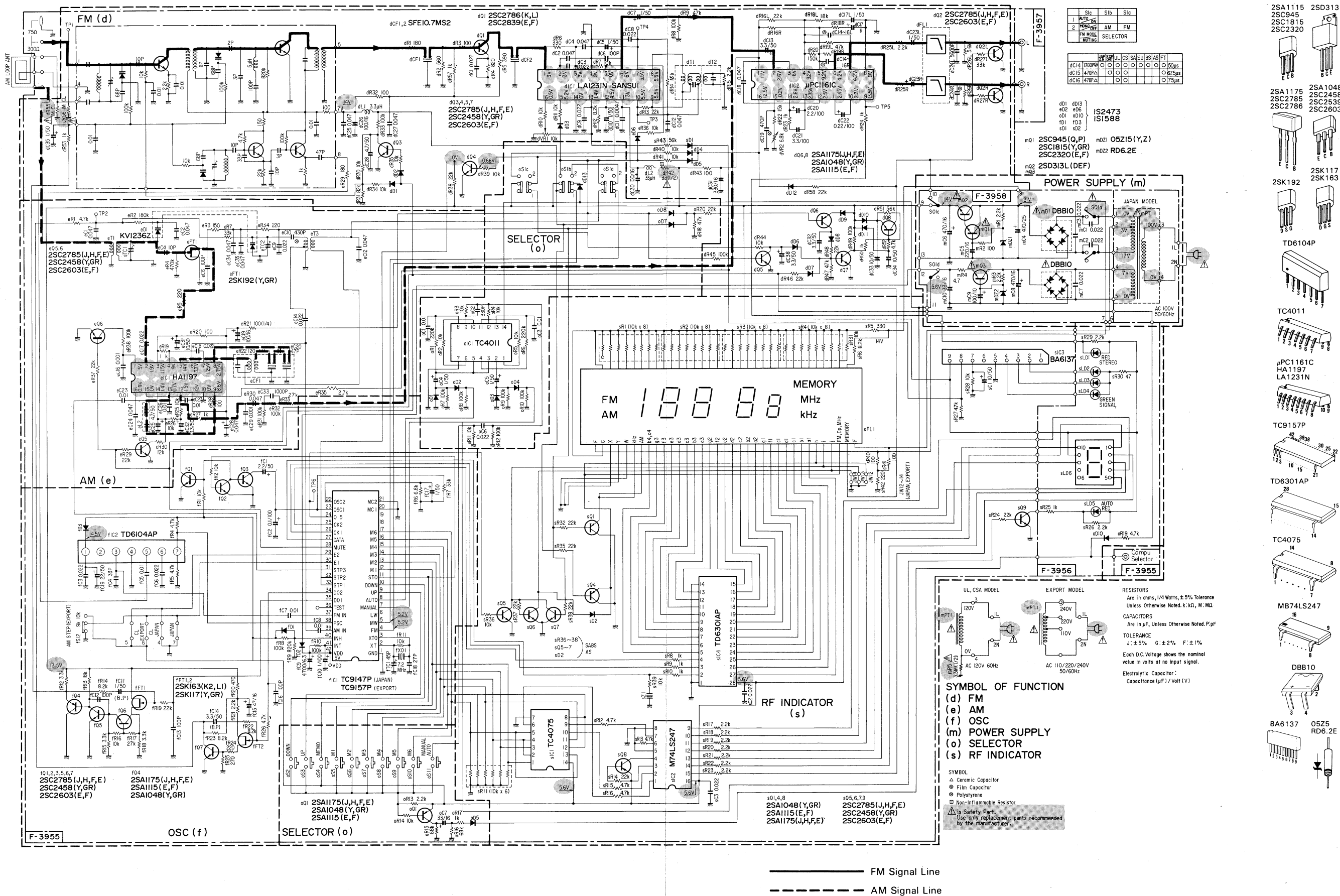
Parts No.	Stock No.	Description	Parts No.	Stock No.	Description
oS2	46133300	Push SW., DOWN	sLD3	07250900	TLG123A
oS3	46133300	Push SW., UP		or 46470300	SEL2410E
oS11	46133300	Push SW., MANUAL/AUTO	sLD4	07250900	TLG123A
				or 46470300	SEL2410E
•LED			sLD5	46176900	TLS-123
sLD1	46176900	TLS-123		or 46470200	SEL2210S
	or 46470200	SEL2210S	sLD6	46502300	LA301VB
sLD2	07250900	TLG123A			
	46470300	SEL2410E			

•Abbreviations

C.R. : Carbon Resistor	E.B. : Bi-Polar Electrolytic Capacitor
S.R. : Solid Resistor	E.B.L. : Low Leak Bi-Polar Electrolytic Capacitor
Ce.R. : Cement Resistor	Ta.C. : Tantalum Capacitor
M.R. : Metal Film Resistor	F.C. : Film Capacitor
F.R. : Fusing Resistor	M.P. : Metalized Paper Capacitor
N.I.R. : Non-Inflammable Resistor	P.C. : Polystyrene Capacitor
C.C. : Ceramic Capacitor	G.C. : Gimmic Capacitor
C.T. : Ceramic Capacitor, Temperature Compensation	V.R. : Variable Resistor
E.C. : Electrolytic Capacitor	S.V.R. : Semi Variable Resistor
E.L. : Low Leak Electrolytic Capacitor	SW. : Switch

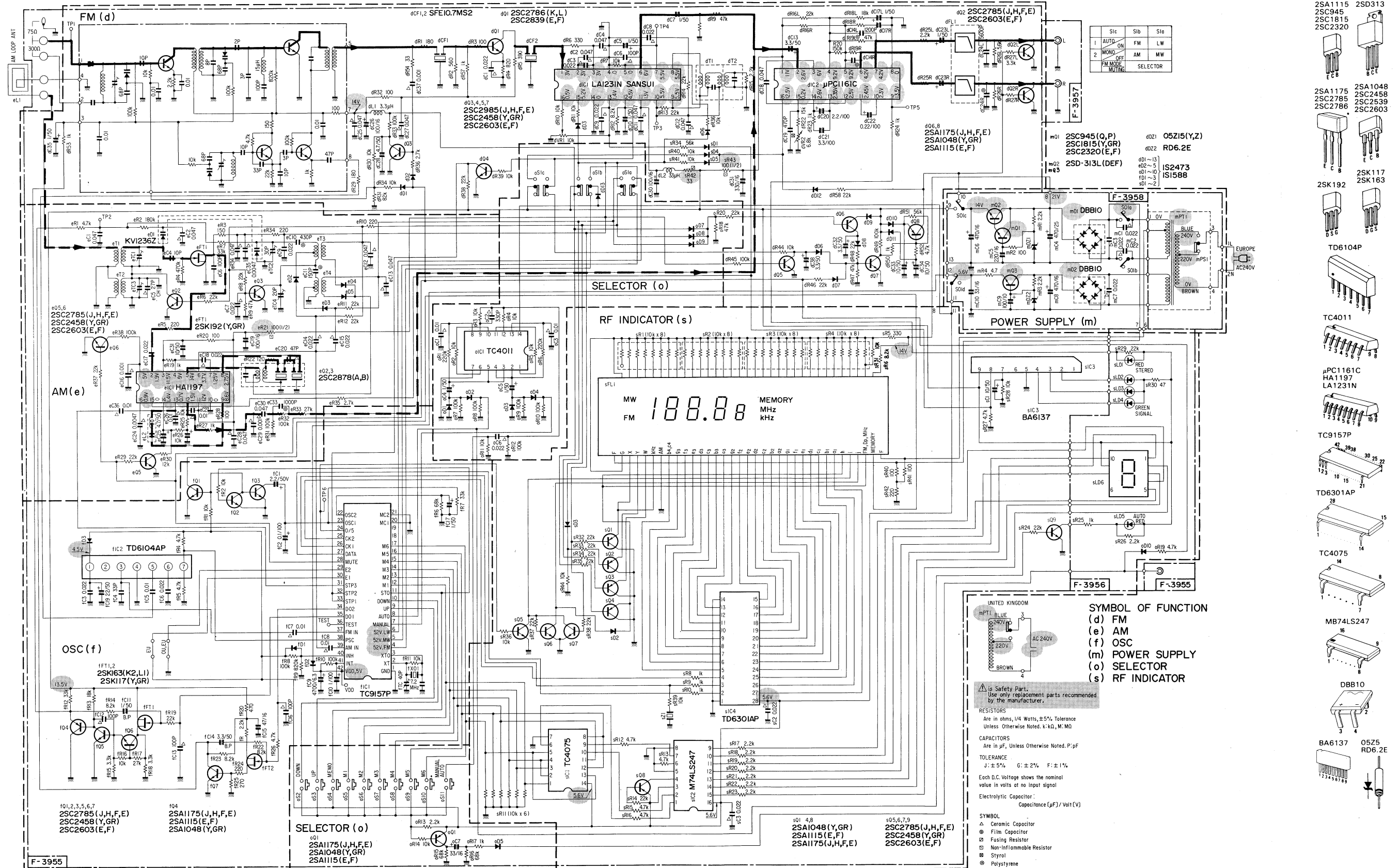
6. SCHEMATIC DIAGRAM 6-1. T-M77

*Design and specifications subject to change without notice for improvement.
 *La présentation et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
 *Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



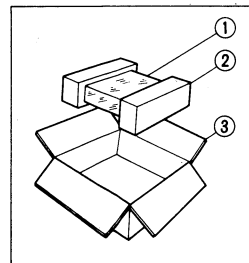
6-2. T-M77L

*Design and specifications subject to change without notice for improvement.
 *La présentation et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
 *Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



7. PACKING LIST

Parts No.	Stock No.	Description
1	07805200	Vinyl Cover
2	47178200	Styrofoam packing
3	47177300	Carton Case (T-M77)
	47184500	Carton Case (T-M77L)



8. ACCESSORY LIST

Stock No.	Description
46557000	Operating Instruction (T-M77)
46563900	Operating Instruction (T-M77L)
46051700	FM Antenna
46186100	AM Loop Antenna
07563000	Antenna Holder
38103200	Pin Plug Cord
46267300	Mini Pin Plug Cord



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